UTL
UNIVERSAL TRADE LINE
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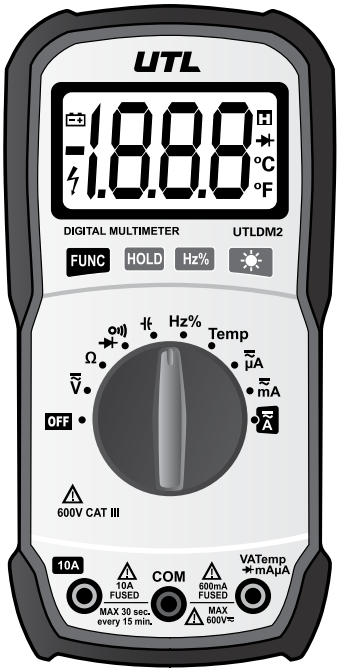
Digital Multimeter
UTLDM2

Instruction Manual
English



1 yr. warranty

Intertek
3194551

600V
CAT III
IEC61010-1

PROFESSIONAL VALUE

RESISTANCE

Range	Resolution	Accuracy
600Ω	0.1Ω	± (0.8% + 3 dgts)
6kΩ	1Ω	
60kΩ	10Ω	
600kΩ	100Ω	
6MΩ	1kΩ	
60MΩ	10kΩ	

Overload protection:250V RMS

FREQUENCY

Range	Resolution	Accuracy
9.999Hz	0.001Hz	± (0.5% + 5 dgts)
99.99Hz	0.01Hz	
999.9Hz	0.1Hz	
9.999kHz	0.001kHz	
99.99kHz	0.01kHz	
999.9kHz	0.1kHz	
9.999MHz	0.001MHz	

TEMPERATURE

Range	Resolution	Accuracy
-20°C to 1000°C	1°C	± (2.0% + 2 dgts)
-4°F to 1832°F	1°F	± (2.0% + 4 dgts)

Overload Protection: 250V RMS

DIODE

Range	Test Current	Open Test Circuit
0.5 to 2.7V	1.0mA	3.0V

CAPACITANCE

Range	Resolution	Accuracy
9.999nF	0.001nF	± (4.0% + 5 dgts)
99.99nF	0.01nF	
999.9nF	0.1nF	
9.999μF	0.001μF	
99.99μF	0.01μF	
999.9μF	0.1μF	
9.999mF	0.001mF	
60mF	0.01mF	

Overload Protection: 250V RMS

DUTY CYCLE

Range	Resolution	Accuracy
1 to 99%	0.1%	± 2%

CONTINUITY

Overload Protection	Open Test Circuit
250V RMS	1.0V

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ELECTRIC SYMBOLS & METER ICONS

⚠	Important safety information	⏚	Ground wire
~	AC (Alternating Current)	⧈	Double insulation protection
⎓	DC (Direct Current)	▭	Fuse
≂	AC or DC	CE	Complies with EU Regulations
−	Negative Polarity	AT	Auto Ranging
Ω	Resistance	+ -	Low Battery
⊣⊢	Capacitance	HOLD	Data Hold
▶|	Diode	☀	Backlight
Hz%	Frequency/Duty Ratio	μ	Micro 10-6
°F	Fahrenheit degrees	m	Milli 10-3
°C	Celsius degrees	k	Kilo 103
•)))	Continuity	M	Mega 106
O.L.	Overload: Range Exceeded		

BUTTON OPERATION

FUNC **Function** selection key, switches measurement functions within each selector position by pressing "FUNC" key to toggle through each selection.

HOLD **Data Hold** key, press "HOLD" key; the reading will be locked and "HOLD" icon will display on display. Press "HOLD" key again to release.

Hz% **Frequency / Duty Ratio** selection key. Pressing this key can select Voltage / Frequency / Duty Ratio or Current / Frequency / Duty Ratio pending selector position.

☀ **Backlight** key: Press "Backlight" key and hold for 2 seconds to turn on backlight. Press again to turn off backlight.

AUTOMATIC POWER-OFF

In the measurement process, if there is no activity by the function key or function selection switch for 30 minutes, the meter will automatically shutdown (sleep state). Hold "FUNC" key to power on and the automatic shutdown function will be cancelled.

GENERAL MAINTENANCE

Warning ⚠ To avoid personal injury or damage to the meter, DO NOT wet the inner parts of the meter. Regularly clean the meter case with damp cloth and a small amount of detergent. Do not use abrasives or chemical solvents.

REPLACE BATTERIES & FUSES

Warning ⚠ To avoid incorrect readings and possible electric shock or personal injury, when " + - " appears on the display, replace the battery immediately. Turn off the meter and disconnect the test probe from the meter before opening the back cover to replace batteries or fuses. Gain access to batteries and fuse by using a screwdriver to loosen the battery cover screws on the back of the meter and removing the cover.

GENERAL SPECIFICATIONS

- Operating Category: 600V CAT III, pollution degree: 2.
- Operating Elevation (< 2000 m)
- Operating Conditions: 0~40°C, <80% RH (do not use meter when temperature <10°C).
- Storage Conditions: -10~60°C, <70% RH (remove the battery).
- Temperature Coefficient: 1× Accuracy/°C (<18°C or >28°C).
- Maximum Voltage between measurement end and ground: 600V DC or 600V AC RMS.
- Fuse protection: mA Grade: fuse F600mA/600V and 10A Grade: fuse F10A/600V
- Sampling rate: about 3 times/second.
- Display: 3 3/4 bits of digit LCD display.
- Power supply: 1 x 9V battery.

ELECTRICAL SPECIFICATIONS

DC VOLTAGE

Range	Resolution	Accuracy
600mV	0.1mV	± (0.5% + 2 dgts)
6V	1mV	
60V	10mV	
600V	100mV	

Overload protection: 600V RMS

DC CURRENT

Range	Resolution	Accuracy
600μA	0.1μA	± (1.0% + 5 dgts)
6000μA	1μA	
60mA	0.01mA	
400mA	0.1mA	
10A	0.01A	± (2.0% + 8 dgts)

mA, μA Overload Protection: 250V RMS
10A Overload Protection: 600V RMS

AC VOLTAGE

Range	Resolution	Accuracy
6V	1mV	± (1.0% + 5 dgts)
60V	10mV	
600V	100mV	

Overload protection: 600V RMS

AC CURRENT

Range	Resolution	Accuracy
600μA	0.1μA	± (1.0% + 5 dgts)
6000μA	1μA	
60mA	0.01mA	
600mA	0.1mA	
10A	0.01A	± (2.0% + 8 dgts)

mA, μA Overload Protection: 250V RMS
10A Overload Protection: 600V RMS

WARNING ⚠

To avoid electric shock or personal injury, please read SAFETY INSTRUCTIONS, WARNINGS and CAUTIONS carefully before use.

SAFETY INSTRUCTIONS: Read Before Use

The UTLDM2 digital multimeter has been designed according to International Electro Safety Standard IEC-1010 (61010-1@IEC: 2001) concerning safety requirements for electronic measuring instruments and hand-held digital multimeters. It meets the requirements for CAT III 600V of IEC1010 and pollution degree 2.

- Users should use the meter strictly according to the provisions of this manual. Otherwise, the warranty for the meter may become invalid.
- The warnings in the user manual are used to remind users of possible danger or dangerous action.
- Cautions in the user manual are used to remind users of possible meter damage or condition or action of measured object.

WARNING ⚠

To avoid possible electric shock or personal injury as well as damage to the meter or measured objects, please use the meter according to the following procedure methods:

- Check the case before using the meter. Don't use the meter when the case is damaged. Check to see if the case is cracked or lacks plastic parts. Please pay special attention to joint insulating layer.
- Check to see whether test leads insulation damage or exposed bare metal. Check test lead continuity. If the test leads are damaged, please replace them with a new set before using the meter.
- Measure known voltage with the meter to verify that the meter is working properly. If the meter is working abnormally, stop using it immediately. A protective device may be damaged. If there is any doubt, please have the meter inspected by a qualified technician.
- Do not test voltage exceeding rated voltage marked on the meter.
- When testing voltage exceeding 30v AC voltage RMS, 42v AC peak or 60v DC, be particularly careful to avoid electric shock.
- When measuring, use correct jack, function and measuring range.
- Do not use the meter in explosive gas, vapor or dusty environments.
- When using the probe, fingers should be behind the probe protection device.
- When connecting circuits, please connect the common test line first, then connect the charged test line. When disconnecting circuits, please disconnect the charged test line first, then disconnect the common test line.
- Before measuring resistance, continuity, and diodes, first turn off power and discharge all high voltage capacitors.
- If the meter is not used in accordance with the instructions, the meter's safety protection function may become invalid.
- For all DC measurements, to avoid the risk of electric shock due to possible incorrect readings, please use AC function to verify the existence of any AC voltage. Then, select DC voltage measuring range equal to or greater than the AC measuring range.
- Before measuring current, check the meter fuse, shut off power to the circuit to be tested, then connect the meter and energize the circuit.
- When opening the case (or part of the case), turn the meter off.
- When the battery low voltage indicator " [+ -] " becomes lit, replace the battery at once. A low battery will cause meter reading errors and may result in electric shock or personal injury.
- Before opening case or battery cover, remove the test leads from the meter.
- When maintaining the meter, use replacement parts specified by the factory.

To Measure	Rotate Dial To	Connect Input Jacks			FUNC Features	Safety Warnings, Cautions and Operational Notes
		10A	COM	Ω °C °F Hz ⊣⊢ mA µAV		
AC/DC Voltage	≂ V	OPEN	**BLACK LEAD**	**RED LEAD**	Toggles between AC (∼) & DC (⎓) Voltage	**WARNING ⚠ :** Don't measure any RMS voltage higher than 600V DC or AC, to prevent injury or damage to meter and equipment. • Display shows voltage polarity (connected with red test probe) when measuring DC voltage.
AC/DC Current > 400mA	≂ A	**RED LEAD**	**BLACK LEAD**	OPEN	Toggles between AC (∼) & DC (⎓) Current	**WARNING ⚠ :** Turn off the power to the circuit to be tested. Discharge all high voltage capacitors on the circuit to be tested. **WARNING ⚠ :** To prevent injury or damage to meter or equipment, do not make current measurements if voltage exceeds 600V. • Before measuring current, first check the meter's fuse. When measuring, use correct input end and function. When the test probe is inserted to the current input end, don't connect the other end of the test probe with any circuit in parallel. • Turn off the circuit to be tested. The black test probe is connected to one end of disconnected circuit (low voltage relatively), and the red test probe is connected to the other end of the disconnected circuit (high voltage relatively). • Connecting test probe reversely make readings negative, but will not damage meter. • Overload is indicated with "OL" on the display.
AC/DC Current < 400mA	≂ mA	OPEN	**BLACK LEAD**	**RED LEAD**	Toggles between AC (∼) & DC (⎓) Current	
AC/DC Current < 400mA	≂ µA	OPEN	**BLACK LEAD**	**RED LEAD**	Toggles between AC (∼) & DC (⎓) Current	
Resistance	Ω	OPEN	**BLACK LEAD**	**RED LEAD**	Toggles between Resistance (Ω) Capacitance (⊣⊢) Diode (⊣▶⊢) Continuity (•)))	**WARNING ⚠ :** When measuring resistance or circuit continuity, to avoid injury or meter damage, turn off the power to circuit and discharge all capacitors. • The resistance measured on a circuit is usually different from the rated value of resistance. This is because the test current of the meter will flow through all possible channels between test probes. • When measuring low resistance, to ensure accuracy, make a short circuit between the test probes and read the resistance value of the short circuit. This resistance value should be subtracted after measuring the resistance to be tested. • When there is no input (for example, open circuit), the display will show "OL", which means that the measured value is out of range.
Capacitance	⊣⊢	OPEN	**BLACK LEAD**	**RED LEAD**		**WARNING ⚠ :** When measuring capacitance, to avoid injury or meter damage, turn off the power to the circuit to be measured discharge all capacitors. • When measuring bulk capacitors with this meter, readings will stabilize after a few seconds.
Diode	⊣▶⊢	OPEN	**BLACK LEAD**	**RED LEAD**		**WARNING ⚠ :** When measuring diodes, to avoid injury or meter damage, turn off the power to the circuit to be measured discharge all capacitors. • The meter will display the diode's forward bias voltage value. If the test probe polarity is reversed, the meter will display "OL", which distinguishes the diode's cathode and anode.
Continuity	•)))	OPEN	**BLACK LEAD**	**RED LEAD**		**WARNING ⚠ :** When measuring resistance or circuit continuity, to avoid injury or meter damage, turn off the power to the circuit to be measured and discharge all capacitors. • If the measured circuit resistance is less than about 50Ω, the buzzer will sound continuously.
Frequency/ Duty Ratio	Hz%	OPEN	**BLACK LEAD**	**RED LEAD**	Toggles between Frequency (Hz) Duty (%)	**WARNING ⚠ :** Don't input voltage higher than 60V DC or 30V AC in frequency/duty ratio measurement position, to prevent electric shock or meter damage
Temperature Fahrenheit	°F	OPEN	**- Temp LEAD**	**+ Temp LEAD**		**WARNING ⚠ :** Don't input voltage higher than 30V in temperature measurement position, to prevent electric shock or meter damage.
Temperature Celsius	°C	OPEN	**- Temp LEAD**	**+ Temp LEAD**		